

REMARKS

Claims 1, 5, 7, 9-12, 14, 17-18, 20-21, 23 and 24 are herein amended.

Claims 1-24 remain pending in the application.

Priority Claim to Provisional Application

The Office Action notes that a specific reference to a previously filed provisional application must be included in the specification, following the title, in order to gain the priority benefit of the previously filed provisional application. Applicant respectfully notes that in paragraph 11 of the transmittal form, submitted with the original filing of the current application, an amendment to the specification was requested. In particular, paragraph 11 of the transmittal form includes the following language:

Amend the specification by inserting before the first line the sentence: This application claims benefit of priority of U.S. provisional application Serial No. 60/160,960 titled "Communication System and Method for Performing Fast Symbol Estimation for Multiple Access Disperse Channels, filed October 22, 1999, whose inventors were Guanghan Xu and Weidong Yang.

Applicant respectfully requests that this amendment be incorporated into the specification.

Substitute Specification

The Office Action objected to the specification because one or more of the margins were too small. Therefore, applicant submits herewith a substitute specification having margins conforming to the patent office guidelines. The substitute specification includes no new matter. A marked-up version of the substitute specification, showing all the changes to the specification of record, is not submitted herewith because the substitute specification is identical to the specification of record except for adjustment of margin sizes.

Claim Objections

The Office Action objected to claims 1, 5, 7, 10, 14, 20 and 24 due to typographical errors and problems associated with term definition, punctuation and antecedent basis. Therefore, these claims have been amended to correct these errors and problems.

Section 112 Rejections

Claims 1-24 were rejected under 35 U.S.C. Section 112, first paragraph, as failing to comply with the written description requirement. Applicant respectfully traverses these rejections based on the following reasoning.

Claim 1, part (a), recites “sampling ... with a time interval equal to a 1/F fraction of said fixed time duration”. Applicant believes that the language of this limitation is sufficiently clear and self-explanatory so as to convey to one of skill in the art that the inventors had possession of the claimed invention at the time the application was filed. As stated in MPEP 2163 Section I, “It is now well accepted that a satisfactory description may be in the claims or any other portion of the originally filed specification.” See *In re Koller*, 613 F.2d 819, 204 USPQ 702 (CCPA 1980) (original claims constitute their own description).

Claim 1, part (f), recites “forward division steps which recursively compute ... until a pre-defined stopping criterion is satisfied”. Applicant notes that the original claims themselves constitute part of the original disclosure of the application, and, that original dependent claims 12 and 18 give examples of stopping criteria as follows:

12. The symbol estimation method in claim 1 wherein said pre-defined criterion is that the length of the latest generated right-hand vector is dJ or that the superdiagonal block matrix in the latest of said first series of matrices and vectors becomes a zero matrix.

18. The symbol estimation method in claim 1 wherein said pre-defined criterion is $L_{i+1}=1$ or $B_{i+1}=0$, s is set to $i+1$ and the forward reduction steps stop.

Furthermore, the specification refers to a criterion for stopping at least at page 14, line 7 which recites “Repeat 2 to 8 until $L_i=1$ ”. Thus, Applicant believes that the original disclosure, including the original claims themselves, includes a sufficient set of clearly

described examples so as to convey to one skilled in the art that the inventors had possession of “forward division steps which recursively compute ... until a pre-defined stopping criterion is satisfied” at the time the application was filed.

Claim 21, part (f), recites “forward division steps which recursively compute ... until a predefined stopping criterion is satisfied”. The arguments given above in support of claim 1 relative to the “predefined stopping criterion” apply with equal force to claim 21.

Claim 23 recites oversampling “with a time interval equal to $1/P$ fraction of said fixed time duration”. The arguments given above in support of claim 1 relative to the limitation of “sampling ... with a time interval equal to a $1/F$ fraction of said fixed time duration” apply with equal force to claim 23.

Claim 2 recites “wherein said channels are convolutions of physical channels and their corresponding pulse shaping filters of said channels.” Applicant submits that the language of this limitation is sufficiently clear and self-explanatory so as to convey to one of skill in the art that the inventors had possession of the claimed invention at the time the application was filed.

Claim 3 recites “wherein said channels are convolutions of physical channels and their corresponding spreading codes of said signals in a code-division-multiple-access communication system”. Furthermore, the specification refers to code-division-multiple-access receivers and spreading code in the following passages:

“The invention is particularly useful for code-division-multiple access (CDMA) receivers ...”. (First Paragraph of page 1)

“In a code division multiple access system with J users, there are M ($M \geq 1$) antennas and hence M physical receivers at the base station, and the length of the spreading codes is P .” (Lines 29-31 of page 3)

Applicant submits that the language of the recited claim limitation and the supporting passages in the specification are sufficiently clear and self-explanatory so as to convey to one of skill in the art that the inventors had possession of the claimed invention at the time the application was filed.

Claim 4 recites “wherein said channels are convolutions of physical channels, their corresponding spreading codes of said signals, and their corresponding pulse shaping

filters in a code-division-multiple-access communication system.” The arguments asserted in support of claim 3 above apply with equal force to claim 4.

CONCLUSION

Applicant submits the application is in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert & Goetzel PC Deposit Account No. 50-1505/5277-01701/JCH.

Also enclosed herewith are the following items:

- ☒ Return Receipt Postcard
- ☒ Substitute Specification
- ☒ Notice of Change of Address

Respectfully submitted,



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